FRBSF WEEKLY LETTER

September 14, 1984

Are Commodity Prices Fortelling Deflation?

In the last few months, prices of commodities such as gold, industrial raw materials and agricultural products have declined significantly. The declines have been interpreted by many observers as foretelling deflation. The observers have gone on to claim that this deflation is due to "extremely tight" monetary policy by the Fed. Within this context, this *Letter* discusses the need to distinguish between absolute and relative prices of commodities. Some prices may indeed fall although the aggregate price indexes show small (or no) increases. Our analysis indicates that the decline in the relative price of some commodities has been due to commodity-specific factors and has quite different implications for monetary policy than declines due to an environment of widespread deflation.

What the data show

Often, the evidence provided by those predicting deflation has been restricted to movements in the prices of individual goods. Among the price declines quoted are the 15 percent fall in the price of gold futures over the period from May 1984 to the beginning of July 1984 and the coincident 20 percent decline in the price of soybean futures. Sometimes, certain price indexes are mentioned as well. For example, the 16 percent decline in the Economist's Index of Industrial Commodities from the end of March to the end of June has been quoted in the press.

These figures present a picture that contrasts with that shown by the aggregate indexes. The Consumer Price Index, for example, has risen by 1.4 percent from February to July 1984, while the Producer Price Index (PPI) has increased by 1 percent over the same period. Neither movement is evidence of deflation. However, these small increases hide the varying behavior of prices in different sectors of the economy. Thus, while the Price Index for Industrial Commodities showed (small) increases each month in 1984, the Price Index for Agricultural Commodities fell nearly 2 percent from March to June 1984.

To understand the causes of this apparent contradiction, it is necessary to focus on the distinction between relative and absolute prices. An examination of the aggregate PPI reveals that the increase in the PPI for agricultural commodities was slower than the increase for the aggregate index from January 1979 to January 1984. Thus, the price of agricultural commodities relative to other commodities in the PPI has been falling since 1979, and this decline in their relative price has continued over the period March-June 1984. However, over the latter period, the aggregate PPI has stayed approximately constant, while the PPI for agricultural commodities has declined.

A little reflection will show that the stability of the aggregate index is extremely important in understanding the recent decline in the absolute prices of agricultural commodities. In particular, when the overall inflation rate is low (as represented by a stable aggregate index), an increase in the supply of (or a decrease in the demand for) a particular commodity (wheat, for example) is quite likely to lead to a decrease in its absolute price. This differs from what is likely to happen when the rate of inflation is high. In such a situation, an increase in the supply of wheat will not (unless it is extremely large) show up in a decrease in its absolute price. Instead, wheat prices will just increase more slowly than prices of other commodities. The same decline in the relative price of wheat takes place in both cases, but absolute prices behave differently.

Previous experience easily bears out this assertion. For example, between January 1979 and January 1980—a period of high inflation—the absolute price of farm products increased by 2.6 percent. However, over the same period, the price of farm products relative to the price of industrial commodities (excluding fuel) fell by 9.4 percent. A similar decrease in this relative price took place from March to June this year, but because of the low-inflation environment then prevailing, the relative price decline of 4 percent was matched by an absolute price decline of approximately the same amount. (The declining relative price of farm products is, in fact, a problem that has been around for several decades due to factors quite unrelated to monetary policy.)

Consider, next, the decline in industrial raw materials prices. Chart 1 plots the Producer Price

Index for Industrial Raw Materials while Chart 2 plots the price of Raw Materials relative to the price of all industrial commodities (the price of fuel is excluded from both). Chart 1 indicates that the absolute price of Industrial Raw materials is fairly volatile. The current decline is therefore not unusual; there have been large and sustained declines in the past, for example, in 1976 and 1977. Chart 2 shows that the relative price moves around as well. The present situation is unusual only because the level of this relative price is lower than it has been in the past.

Why some relative prices have declined

What factors are responsible for the historically low relative prices of some commodities? The level of interest rates is one. As an illustration, consider the decline in the price of gold. A high interest rate raises the opportunity cost of holding gold. With Treasury securities yielding close to 13 percent and inflation expected to remain at the 5 percent level, gold is profitable to hold only if it is expected to appreciate at least 8 percent faster than the price level. There seems little reason to expect this to happen, especially when the relevant supply-side factors are considered. For example, it has been pointed out that South Africa—the principal non-Communist supplier of gold—is so beset with economic problems that it can no longer withold supplies to steady the market.

What is true of gold is also true of other precious metals. With financial assets offering high real rates, the demand for real assets has plummeted. In general, any real asset that is to be held over a particular period (say, a year) must be expected to appreciate enough to offset the loss from not holding interest-bearing financial assets instead. If the future price of a real asset cannot be expected to be high enough, individuals will begin to sell that real asset. The resulting decrease in real asset prices continues to the point where the return on holding real assets equals that on holding financial assets.

An immediate application of this principle is found in inventory holding behavior. Although the argument is usually couched in terms of the costs of holding inventories, the basic tradeoff is the same. Thus, for example, in the non-farm business sector, inventory purchases declined from an annual rate of $26.2 billion last Winter to $20.4 billion in the Spring (measured in 1972 dollars). Another example of the consequences of inventory dumping due to high real rates is provided by the recent decline in lumber prices. Chart 2 supports our discussion—since late 1980, the relative price of raw materials has been declining in tandem with the rise in real interest rates.

A second, extremely important factor in the fall in relative commodity prices is the rise in the U.S. exchange rate. To see this, consider Chart 3, which plots the Economist's Index of the Price of Industrial materials and a (trade-weighted) dollar exchange rate.

There are two reasons for the inverse relationship between the price index and the exchange rate. First, to the extent that the price index is based upon sterling prices in London, an appreciation of the dollar implies that dollar prices of commodities will fall while sterling prices remain unchanged. The second is that an appreciation of the dollar means that traders will find it profitable to buy aluminum (for example) in London to sell in the United States. This will depress the dollar price of aluminum in the U.S.

Specific factors also can be found to explain the drops in the prices of other commodities. For instance, copper supply is high because countries such as Chile have been exporting huge amounts to help pay off debts. Both Brazil and Argentina have had record soybean harvests. In the United States, healthy corn and soybean harvests are expected to push prices even lower.

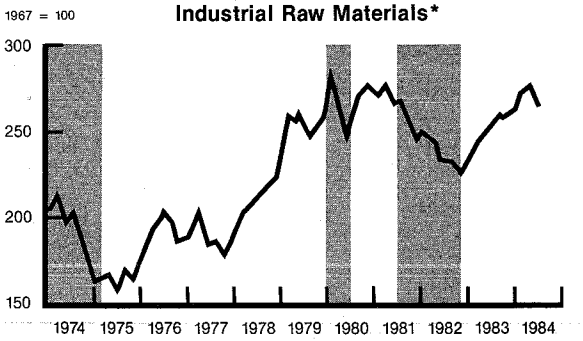
The above examples should provide ample evidence to support the claim that relative commodity prices are weak due to commodity-specific factors. Furthermore, relative price declines are not historically unusual. However, because of the low-inflation environment, they translate into unusual absolute price declines. Here, the behavior of the Consumer Price Index for services offers reassuring evidence. The index increased by more than 2½ percent from January to July this year. This behavior is in line with the explanation above, since services are, in general, immune to effects arising from both a stronger dollar and high interest rates.

Policy implications

Although this *Letter* shows that the recent decline in commodity prices is not signalling incipient deflation, it does not follow that this development should be ignored. Two specific implications follow for policy.

Chart 1

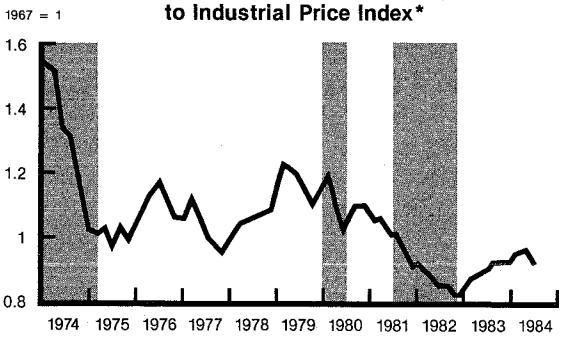
Producer Price Index for Industrial Raw Materials*



* excluding fuels

Chart 2

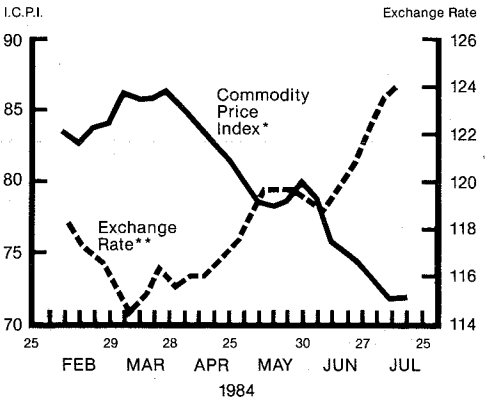
Ratio of Raw Materials Price Index to Industrial Price Index*



* excluding fuels; seasonally unadjusted series

Chart 3

Commodity Price Index and Nominal Effective Exchange Rate



* All Industrial, dollar index 1980 = 100. Source: The Economist

** Source: Morgan Guaranty Trust Co.

First, the current outcry about deflation may indicate future problems in attempting to reduce the rate of inflation. As discussed above, a decline in relative prices is likely to show up in decreasing absolute prices when the rate of inflation is low. It appears that people are much more sensitive to a decline in absolute prices than they are to one in relative prices. Since relative price adjustments will obviously continue to take place in the future, the accompanying decline in absolute prices is likely to generate considerable discontent in some quarters. In such a situation, pressures on the Fed to conduct an "easier" monetary policy are likely to intensify.

Second, it appears that these declines are providing information that can be used in conjunction with the evidence provided by bond markets to understand the current high interest rates. In the recent past, analysts have interpreted the high levels of long-term interest rates to mean that markets expect inflation to accelerate. However, long rates provide evidence only about what future short-term nominal rates are expected to be, and no information about the real component of interest rates. As such, conditions in the commodity market provide an important signal about how much inflation is expected. The message seems to be that markets do not expect very much. The bond market's fears, therefore, have to do with the level of real interest rates, and it appears that market participants expect real interest rates to remain high.

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Opinions expressed in this newsletter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System.
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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 8/22/84	Change from 8/15/84	Change from 12/28/83 Dollar	Change from 12/28/83 Percent Annualized
Loans, Leases and Investments[1] [2]	180,833	−1,278	4,808	4.1
Loans and Leases[1] [6]	161,811	−1,252	6,456	6.3
Commercial and Industrial	48,391	− 294	2,428	8.0
Real estate	60,747	107	1,848	4.7
Loans to Individuals	29,327	96	2,676	15.3
Leases	5,028	4	− 35	− 1.0
U.S. Treasury and Agency Securities[2]	11,839	− 25	− 668	− 8.1
Other Securities[2]	7,184	1	− 979	− 18.3
Total Deposits	187,947	−1,773	− 3,050	− 2.4
Demand Deposits	43,087	−2,040	− 6,150	− 19.1
Demand Deposits Adjusted[3]	28,363	− 901	− 2,968	− 14.4
Other Transaction Balances[4]	12,155	− 139	− 620	− 7.4
Total Non-Transaction Balances[6]	132,706	407	3,721	4.4
Money Market Deposit Accounts—Total	37,699	25	− 1,898	− 7.3
Time Deposits in Amounts of $100,000 or more	41,135	323	2,970	11.9
Other Liabilities for Borrowed Money[5]	19,385	− 492	− 3,622	− 24.0
Weekly Averages of Daily Figures	Period ended 8/13/84	Period ended 7/30/84		
Reserve Position, All Reporting Banks				
Excess Reserves (+)/Deficiency (−)	43	61		
Borrowings	24	111		
Net free reserves (+)/Net borrowed(−)	19	− 50		

[1] Includes loss reserves, unearned income, excludes interbank loans
[2] Excludes trading account securities
[3] Excludes U.S. government and depository institution deposits and cash items
[4] ATS, NOW, Super NOW and savings accounts with telephone transfers
[5] Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources
[6] Includes items not shown separately